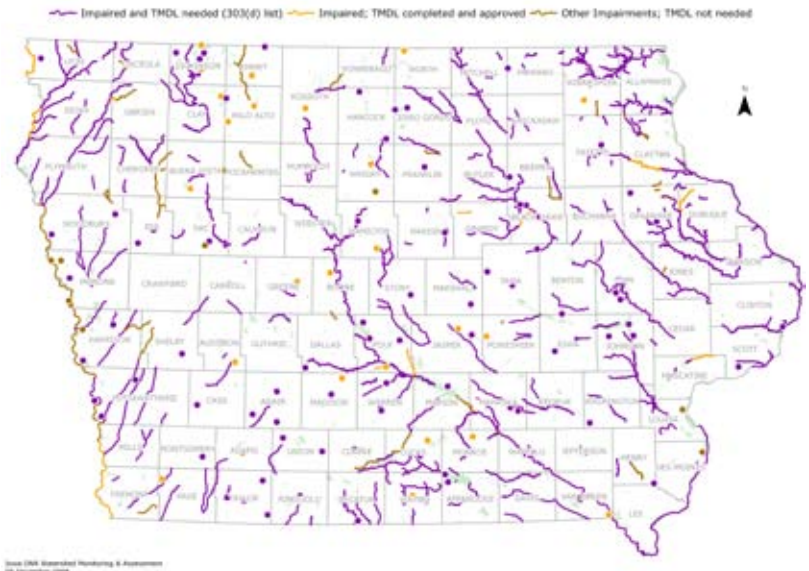
UNDERSTANDING

Iowa's Impaired Waters

You've likely heard of Iowa's many "impaired" waters. As the DNR prepares the latest version of the state's "impaired waters list," it's important to understand what makes a water impaired, and more importantly, what we can all do to take streams and lakes off the list.

2008 Draft Impaired Waters List



Lakes and stretches of streams and rivers in Iowa each have specific designations, based on what they are used for—like recreation, such as swimming or fishing; drinking water; or maintaining a healthy population of fish and other aquatic life.

Every two years, Iowa must report on its progress in meeting water quality goals to the U.S. Environmental Protection Agency. The state prepares a report, called the 305(b) report, that shows how well Iowa waters are meeting those goals. The report includes waters that meet the designated uses, waters that we need more information about and waters that are impaired (see page 3).

If the water quality in the stream or lake prevents it from meeting its designated use, it does not meet Iowa's water quality standards and is considered "impaired."

The waterbody is then placed on the "303(d)" list, commonly referred to as the "impaired waters list." This is named after section 303(d) of the federal Clean Water Act and means that the stream or lake needs a water quality improvement plan written (also known by a technical name, "Total Maximum Daily Load," or "TMDL").

The water quality improvement plan outlines water quality problems, identifies sources of the problem, identifies needed reductions in pollutants and offers possible solutions. Water quality improvement plans are approved by the U.S. Environmental Protection Agency and then the waters are moved off the 303(d) list. Even though a water moves off the 303(d) list, the waterbody is still considered impaired until water quality improves.

While the water quality improvement plan can offer ideas for solutions, and the DNR can provide technical or financial assistance for Iowans looking to organize a watershed improvement effort, local groups need to take action and work with the DNR to actually improve their stream or lake.

Local action can lead to improved water quality, which can help the stream or lake meet state water quality standards again. When the waterbody meets those standards, it may be able to come off the impaired waters list.

Inside:

What's a waterbody?

For the impaired waters list, waterbodies are defined as Iowa lakes, streams and wetlands that have assigned water use designations. When it comes to streams and rivers, they are split into segments based on different designated uses.

For example, a segment of the Cedar River near Cedar Rapids is designated for drinking water, while a portion of the same river near Waverly is protected for other uses. If one segment is impaired, that does not mean the entire stream or river is impaired. However, improving the entire watershed, or area of land that drains to the stream, can have an impact on water quality in the impaired segment.

Not all waterbodies in Iowa are assessed for the 2008 list, because water quality monitoring has not been conducted on many of our lakes and streams. Consequently, we don't have the information to determine whether they are impaired or not.

Top 10 Causes of Impairment in Rivers/Streams

Rank	Cause Name	Number of Stream/ River Segments *
1	Bacteria	178
2	Biological	142
3	Fish kill	61
4	Mercury (fish)	12
5	Low dissolved oxygen	11
6	Nitrate	5
7	Aluminum	4
8	Arsenic	4
9	Sewage	4
10	Ammonia	3

Top 10 Causes of Impairment in Lakes

Rank	Cause Name	Number of Lakes *
1	Algae	35
2	Turbidity	32
3	Bacteria (beaches)	29
4	pH	26
5	Ammonia	7
6	Mercury	4
7	Atrazine	3
8	Fish kill	3
9	Low dissolved oxygen	3
10	PCBs	2

*These charts show the top 10 reasons waters are impaired in Iowa. Lakes and streams may be impaired for more than one cause. Biological impairments are a major cause of impairment in streams, but are difficult to trace to a specific cause.

What does "impaired" really mean? Is the water unsafe?

A waterbody is impaired when its water quality does not fully support that waterbody's designated uses for human contact, aquatic life or drinking water. Some of these impairments, like high nitrate levels in the Raccoon and Cedar rivers, could pose a risk to Iowans' drinking water if not treated for nitrate removal or mixed with other sources of drinking water to lower nitrate levels. The decline in freshwater mussels in many Iowa streams also indicates a severe water quality problem. However, most impaired waterbodies in Iowa are generally not grossly polluted.

"The majority of impairments in Iowa waters are minor. Iowa's water quality standards are designed to alert us to a potential problem before serious pollution problems begin," said John Olson, the DNR's specialist on water quality assessments. "For the most part, when a water is impaired, it tells us that we, as Iowans, need to act before those problems become severe."

Why don't these waters meet their designated use?

High bacteria levels can present health risks for those swimming, wading and playing in the water. Excess nutrients such as nitrogen and phosphorus, and sediment make it difficult for fish, plants and other aquatic life to thrive. As for drinking water, high levels of nitrate and other chemicals often call for additional treatment and higher costs. For example, the Des Moines Water Works built the world's largest nitrate removal facility because of extremely high nitrate levels in the Raccoon River, one of its sources for drinking water.

If a water doesn't meet its designated use for recreation, is it unsafe?

In most cases, an impairment indicates that there is a minor problem and that we need to address it before it becomes severe. However, there are some waters in Iowa with serious pollution problems.

Beaches are generally protected for swimming, as monitoring at Iowa's 37 state park beaches shows that indicator bacteria exceeded the levels for impairment only about 8 percent of the time since monitoring began in 2000.

However, even when bacteria levels are high, the fish are safe to eat when properly cooked, unless the waterbody has a listed fish consumption advisory. Only a few lakes and river segments have had fish consumption advisories.

What do the impairments mean?

Waterbodies can be impaired because water monitoring shows high levels of pollutants, like nutrients, sediment or chemicals. Streams and lakes can also be impaired when biological monitoring finds that fish and other aquatic life populations aren't as diverse or numerous as they should be.

By looking at the types and numbers of species, including fish, plants, insects and other aquatic creatures, scientists can make conclusions about water quality. The presence of certain species, especially in high numbers, indicate good water quality, while other species can tolerate higher levels of pollution. Investigators also look to see if species are stressed or diseased.

Biological impairments are difficult to trace to a specific cause. Likely causes include siltation, which can reduce spawning success or insect hatches, low dissolved oxygen, and excess nutrients such as nitrogen or phosphorus which can cause algal blooms.

As water quality improves, fish and other aquatic life populations should grow and diversify, resulting in better biological communities.

What does the list say about water quality in Iowa?

Biological impairments are some of the most common impairments in Iowa streams and are due to unknown causes affecting the biological communities, altered habitats, low oxygen levels and siltation. In lakes, most impairments are due to turbidity (cloudy water), algal growth and excess nutrients.

While the 2008 list includes more impaired waters than previous lists, it does not necessarily mean that water quality is worse in Iowa. It indicates that more monitoring has been done and more data has been collected than in previous years.

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- JOHN OLSON, DNR

It may also seem easy to compare the number of impaired waters to surrounding states. Because there are so many varying factors in determining a state's list, this is an inaccurate comparison, like comparing apples and oranges.

Water quality in Iowa has also drastically improved since the advent of the Clean Water Act in the 1970s, which put controls on industrial and city sewage discharges into streams and rivers.

"It's been long enough since the Clean Water Act that many of us don't recall how poor water quality conditions were then, with raw, untreated sewage and other discharges going directly into our waters," Olson said. "Our waters are much better now, but we still have work to do, including addressing pollution from nonpoint sources."

Nonpoint source pollution, especially sediment, nutrients and bacteria, washes into Iowa's streams and lakes from farm fields, forested lands and urban areas. Those pollutants come from an area called a "watershed," which is an area of land that drains into a lake or stream.

"With the majority of our pollution problems coming from nonpoint sources, it can be more difficult to clean up than stopping a discharge from a pipe," said DNR Director Richard Leopold. "But it's not impossible. Iowans are

Impaired Waters - Integrated Report

EPA requires that states assess their water quality every two years. EPA's recommended reporting format is called the "Integrated Report." States are asked to place their waters into one of five categories. Waters that were assessed and found not to be impaired are included in categories 1 and 2. Impaired waters are listed in categories 4 and 5, while category 3 consists of waters that were not assessed or were assessed but did not have enough data to qualify as impaired or unimpaired.

Category	Description of the Category	Number of Waters
Category 1	All designated uses are met	15
Category 2	Some of the designated uses are met, but there are insufficient data to determine if the remaining uses are met.	375
Category 3	Insufficient data to determine whether any designated uses are met.	1,188
Category 4	Waterbody is impaired, but already has or does not need a water quality improvement plan written	96
Category 5	Waterbody is impaired and needs a water quality improvement plan.	445

working hard to improve water quality, and we're seeing results. That gives us more reason to continue to step up our water quality improvement efforts."

Did any waters come off the list?

While 14 waterbodies moved off the 2006 303(d) list because water quality improvement plans were written, relatively few waters came off the impaired waters list because water quality improved enough to meet water quality standards.

"We have many water quality projects underway, more planned, and we're seeing improvements over time," said Leopold. "A great example of this process is Lake Icaria. We've done some great watershed and in-lake work there in the last decade, and we're asking EPA to consider removing it from the impaired list."

Projects across the state, like those at Nine Eagles Lake, Slip Bluff Lake and in northeast Iowa's trout streams, have all seen improvements in water quality. For example, the average water clarity at Slip Bluff increased from 4.3 to 11.8 feet between 2000 and 2006. In 1980, only six trout streams were clean and healthy enough to allow trout to reproduce naturally - the other streams depended on stocking to keep populations alive. Today, thanks to water quality improvement projects, 32 trout streams sustain naturally reproducing trout.

The DNR and many Iowans also put great effort into maintaining our high quality waters to ensure they don't reach the impaired waters list.

Why were so many streams and lakes added to the list?

The DNR added about 190 new waterbodies to the 2008 list, generally because water monitoring and biological monitoring data were not available for these streams and lakes prior to the 2008 list.

The addition of more than half of these waters resulted from a change in Iowa's water quality standards. The changes presume that all perennial streams and rivers in the state should be protected for primary contact recreation (like swimming) unless assessments show they would not support that use.

"If we had monitoring data available for all small streams, it's likely most of them would have bacterial impairments," Olson said. "So we put those streams with data in a special impaired category based on that presumption, and some could potentially come off the list once we complete our on-site assessments of those streams."

"IOWANS ARE WORKING HARD TO IMPROVE WATER QUALITY, AND WE'RE SEEING RESULTS."
- DIRECTOR RICHARD LEOPOLD

In all, there are 541 impaired waters. This includes 96 waters that have a water quality improvement plan written (or don't need one) but remain impaired.

When were data collected for the list?

The EPA requires the DNR to submit an impaired waters list every two years. The 2008 list reflects water quality data collected from 2004 through 2006.

How can I comment on the list?

You can find the draft version of the impaired waters list, as well as instructions on submitting a comment, on the DNR website at www.iowadnr.gov/water/watershed/impaired.html.

What will happen to my comments?

Your comments will be carefully considered as the DNR finalizes the list before sending it to the U.S. Environmental Protection Agency (EPA) for approval.

What's next?

After the public comment period ends, the DNR will revise the draft list and submit it to the EPA. The EPA will then approve the list or make revisions. Then the final list is returned to the DNR.

Once the impaired waters list is finalized, the DNR will use the list to help prioritize water quality efforts. It's also important for Iowans to take ownership of the waters on the list and work locally with the DNR and other organizations to improve our waters.

For more information:

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www.iowadnr.gov/water/watershed/impaired.html
http://wqm.igsb.uiowa.edu/WQA/303d.html